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# JOURNAL OF EDUCATION

DIFFERENCES IN  
ATTITUDES OF  
DROPOUTS AND  
COMPLETERS IN A  
NEW ENGLAND  
SUBURBAN ADULT  
EDUCATION  
PROGRAM

R. C. HURKAMP

MODIFICATION OF  
THE CLASSROOM  
BEHAVIOR OF A  
"DISADVANTAGED"  
KINDERGARTEN  
BOY BY SOCIAL  
REINFORCEMENT  
AND ISOLATION

M. S. ABBOTT

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### *Editor's Note*

*The two studies published in this issue are abbreviated versions of two theses, a doctoral thesis (R. C. Hurkamp) and a Master's thesis (M. S. Abbott), presented in Boston University, School of Education, in 1967, and 1969. Both studies represent modest contributions to a better understanding of certain contemporary school problems.*

*The publication of these works, moreover, implements a policy of the editorial board of the Journal, namely that it publish from time to time work done by students of this university.*

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# Differences in Attitudes of Dropouts and Completers in a New England Suburban Adult Education Program\*

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\* The complete dissertation (R. C. Hurkamp, May 19, 1968) is available in Mugar Library, Boston University, Boston, Mass.



## **Background on the Dropout Problem, The Purpose of the Study, And Definition of Terms Used**

It may be assumed that the improvement of society might be accelerated by a better educated adult population. However, if in an attempt to acquire further education the adult is faced with factors and situations which in some way cause him to withdraw from further education, all of society shares his loss. It was the general purpose of this study to help reduce this loss.

A comprehensive investigation leading to control of the overall problem of withdrawal would necessarily be concerned with adult education in all its aspects: public school programs—urban and suburban, adult centers, correspondence schools, university extension, evening colleges, etc. Personal and situational factors connected with each aspect would need to be identified and studied. Finally, for each situation, some measure of controlling the flow of dropouts would need to be devised. However, more limited approaches to the problem might cumulatively produce the same result, and it is toward that end that this investigation was directed.

Previous research concerning withdrawal has been concerned chiefly with factual data about participants, and the results have been somewhat inconsistent. It was an assumption of the investigator that the attitudes of students toward certain "attitude objects" (factual data such as age, number of children, size of class, location of school, etc.) might be more important than the objects themselves. Furthermore, it was felt that by limiting the study of attitudes to those experienced at the very beginning of the program—initial attitudes—some valuable information could be gained that might lead to the prevention of withdrawal, especially early withdrawal. Research in initial attitudes might enable informative literature and publicity to be improved, orientation programs to be planned, predictive instruments to be designed to identify potential dropouts and make possible effective group guidance or individual counseling, and physical conditions to be improved. In other words, to Verner and Davis' suggestion<sup>62</sup> that adult education initiate registration procedures that collect socio-economic data systematically before withdrawal occurs and thus avoid some of the weaknesses in *de post facto* research, this study proposed to investigate the possible

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worth of also collecting data concerning attitudes at approximately that time.

In the public school program chosen for the study the students are similar to the typical adult student described by John Johnstone.<sup>24</sup> They enjoy an above-average income and live in the suburbs of an urbanized area. Withdrawal is a problem, as it is for other public school programs, because:

1. It creates a morale problem. Withdrawal seems to lead to more withdrawal.
2. Some courses must, of necessity, have a maximum enrollment. When that maximum is reached, no more students may enroll in them. Thus the enrollees who are destined to be dropouts are, in effect, preventing other students from enrolling in the course that term.
3. Courses which are started with barely adequate enrollment (usually twelve to fifteen students insures the start of a course) must often be cancelled after some withdrawal has occurred. The students in those courses must then wait until the cancelled course is offered again or be absorbed by their second or third choice course already in progress. The latter often results in more withdrawal because of lack of sufficient motivation or inability to catch up with the other students.
4. State aid for vocational courses (and more recently for basic education) is based on attendance. This involves over one-third of the courses offered.

#### *Definition of Terms Used*

For the purpose of this study the terms used were defined as follows:

*Differences:* Significant deviations of the parameters of groups of data that cannot be attributed to chance with any reasonable degree of probability.

*Attitudes:* Tendencies to react positively or negatively toward the attitude objects presented on the first evening of class.

*Dropouts:* Students who discontinued attendance—the third consecutive absence marking the point at which a student was “dropped”—and students who were not present at either of the last two class meetings.

*Completers:* Students who finished the term having had at no time more than two consecutive absences and who were present for at least one of the last two class meetings.

*New England Suburban Adult Education Program:* Approximately fifty-five courses offered by a public school in a suburban New England town for ten weeks each term, two terms per year.



## **A Description of Activities Including Preparation of the Questionnaire and Collection of Data**

The first step toward collecting data concerning initial attitudes was to answer the question: Attitudes toward what? Since this was to be a study of students who complete and students who drop out, it was obvious that the attitude objects chosen should be those that might be of greatest significance with relation to completion and withdrawal. Based on the personal experiences of the writer both as a teacher and as a student in various adult programs and upon an extensive study of the literature pertaining to participation and attrition, a list was drawn up of attitude objects which seemed relevant. Then a survey was conducted among eleven psychologists, sociologists, and adult program directors and leaders. (Appendix A) They were asked to rate the items on the list as to degree of importance as possible predictors of withdrawal in adult education programs and to add to the list if possible. Items in the "important" range were used as a basis for the questions on the final instrument.

The size of the population and the fact that the data had to be collected in a short span of time—after registration, yet before instruction was given—necessitated the use of a questionnaire. (Appendix B) There were 39 attitude questions, each with four possible answer choices. As well as being applicable to statistical analysis, this form of questioning represented an attempt to obtain an answer which might identify the respondent as having, to some degree, either positive or negative feelings toward an attitude object. The four answer choices ranged from what might be termed a "positive" (completer) attitude to a "negative" (dropout) attitude, although it was realized that reordering might occur in several instances. The answer choices for the attitude questions were presented randomly, rather than in any sort of progression, so that the respondent would be encouraged to choose carefully and not fall into an answer pattern.

Of the 66 questionnaire items, 27 were factual items. Each had from two to five possible answer choices, allowing for an adequate range of response. These questions were not intended to be analyzed individually but were to be used only in connection with the attitude questions. Thus in many cases the information requested paralleled that requested



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in attitude questions. For example, students were asked, factually, to indicate their age range. One of the attitude questions which paralleled this asked the student how he thought his age would affect his success in the course. Those in any given range could be used as a sub-population especially in cases where the analysis of a particular attitude question showed no differences between dropouts and completers based on the entire population.

At the end of the fall term attendance sheets for each course were checked. Those students who had missed three classes consecutively or who had not been present at either of the last two class sessions were designated, for the purposes of this study, as dropouts. Their identification numbers were ascertained from the Questionnaire Identification Form (Appendix C) and were recorded on a Withdrawal Form. (Appendix C) Students were classified as early dropouts if the first of the three consecutive absences occurred during the first five class sessions. At this point a late dropout group was defined in order to identify those students who persisted past the first five sessions but who eventually dropped out.

Telephone calls were made to all dropouts within a few weeks after the end of the fall term. They were requested to give the reason they had discontinued and were assured that this information would be considered confidential. The various reasons given for dropping out were listed on the Withdrawal Form.

IBM cards were produced directly from the standard answer sheets. The cards were then processed using a program that allowed each column to be distributed with up to five columns used as controls. The printouts were in matrix form for each question. The row and column headings designated attendance status and answer choices respectively. Individual cells contained the frequency with which a choice was made by a particular group. In addition, the program provided printouts of the percentages of each frequency to the row subtotal. These percentages proved to be quite useful in selecting particular questions for statistical analysis.

## Presentation and Discussion of Results

On the basis of the first run it was discovered that there was the following distribution of students by withdrawal status:

Completers	406
Early dropouts	56
Late dropouts	122
Dropouts for reasons of illness	11
Total dropouts of all types	<u>189</u>
Total number of cards processed	<u>595</u>

Before the next run, the cards of those who withdrew because of illness were removed from the sample since their attitudes would not necessarily be related to their withdrawal.

Each of the attitude questions was based upon a null hypothesis which assumed that the responses to the question would not be related to withdrawal. Many of the questions appeared to refute this hypothesis but a formal test of significance was required to insure beyond a reasonable doubt that the relationships or associations were not accidental. The  $\chi^2$  test was chosen and tables of observed frequencies were compared with tables of frequencies that were to be expected on the basis of the null hypotheses. Columns in the expected tables containing cells with frequencies of less than five were dropped.

The first runs were made with only dropout status controlled to determine if any of the attitude questions showed significance for the entire population. After the calculation of  $\chi^2$  values, there were seven questions which were significant at the 5 percent level or better. The remainder of the runs were made with one factual question used as an additional control. As a result of these procedures, a total of 27 of the 39 attitude questions were found to be significantly related to withdrawal. The results are summarized in TABLE 1. The column labeled "dropout direction" refers to the manner in which dropouts responded as compared to the completer group. Since space does not permit a listing of the exact choices for each question, only extremes are indicated. In many cases, however, the bulk of responses reached neither extreme.

It seemed of value to determine whether certain categories of questions contained greater percentages of significant questions than oth-



TABLE 1.  
Summary of Results

Attitude Object	Dropout Direction	Control	$\chi^2$	Matrix	Confidence Level	Dropout Group
Expectation of success in course	H - <u>L</u>	None	8.20	2 x 4	5%	All
Guilt concerning absence from home	Y - <u>N</u>	None	10.32	2 x 3	1%	All
Interest in open house participation	H - <u>L</u>	None	15.35	2 x 4	1%	Early
Degree of teacher skill	H - <u>L</u>	None	6.23	2 x 3	5%	All
Previous school experience	G - <u>B</u>	None	14.38	2 x 4	1%	All
Value placed on education	H - <u>L</u>	None	11.01	2 x 4	5%	All
Expectation of course difficulty	<u>H</u> - L	None	17.40	2 x 4	1%	All
Preparedness for course	H - <u>L</u>	Age 21-30	6.11	2 x 2	5%	Early
Expectation of social contacts	H - <u>L</u>	Age over 50	8.07	2 x 3	5%	All
Transportation difficulties	Y - N	Age 41-50	5.86	2 x 2	5%	Late
Location of school	G - <u>B</u>	Age over 50	9.24	2 x 2	1%	Late
Distribution of ages in course	G - <u>B</u>	Age 31-40	6.98	2 x 2	1%	All
Expectation of gain from course	H - <u>L</u>	Former ad. ed. student—town program	4.06	2 x 2	5%	All
Reputation of school	G - <u>B</u>	Former ad. ed. student—town program	4.20	2 x 2	5%	Late
Sureness in choice of course	H - <u>L</u>	Housewife	4.11	2 x 2	5%	Late
Foregoing activities outside the home	E - <u>D</u>	Not active in community affairs	8.06	2 x 3	5%	All
Parking situation at school	G - <u>B</u>	Somewhat active in community affairs	4.98	2 x 2	5%	Late
Impression of instructor	F - <u>U</u>	Not active in community affairs	10.36	2 x 2	1%	All
Time of day course is offered	G - <u>B</u>	Active in community affairs	8.47	2 x 3	5%	All
Impression of others in course	F - <u>U</u>	Not active in community affairs	4.72	2 x 2	5%	All
Satisfaction with arrangement for child care	<u>H</u> - L	Live 1-6 mi. from school	4.58	2 x 2	5%	Early
Burden placed on spouse or family	H - <u>L</u>	Live 4-6 mi. from school	7.84	2 x 2	1%	All
Changes in living routine because of school	Y - <u>N</u>	5 or more in family	6.07	2 x 2	5%	Early
Foregoing television	E - <u>D</u>	Males	5.50	2 x 2	5%	Late
Distribution of sexes in course	G - <u>B</u>	Females	10.38	2 x 4	5%	Early
Impression of classroom	F - <u>U</u>	4 yrs. of college	5.85	2 x 2	5%	Late
Willingness to do homework	H - <u>L</u>	"Always" interested in subject matter	6.09	2 x 3	5%	All

Dropout Direction—Key

H - L High-Low

Y - N Yes-No

G - B Good-Bad

E - D Easy-Difficult

F - U Favorable-Unfavorable

ers. Table 2, below, lists eight categories and the number and percentages of significant questions in each.

TABLE 2.  
*Question Categories*

No.	Questions Regarding:	No. of Questions	% of Significant Questions
1	Course	8	87%
2	Personal factors	2	0%
3	Competing factors	2	100%
4	Instructor/other students	7	71%
5	Environmental factors	8	63%
6	Prestige	4	50%
7	Home and family	5	80%
8	Education	3	67%

From TABLE 2 it can be seen that categories 1, 3, 4, 7, and 8 contain high percentages of significant questions. It is interesting to note that except for category 3, the subjects of the categories mentioned above could not easily be studied by asking factual questions. This is a further indication that attitudes are independently related to withdrawal. It can also be seen however, that category 2 (personal factors) contained no significant questions. Thus, although attitudes have generally been shown to correlate with withdrawal, the choice of attitude objects must be made with care. In this case, the results, at least to some extent, bear out the jury rating of the attitude objects in this category, which tended to be lower than for many of the other attitude objects.

The response patterns to the questions in category 7 (see Appendix D) are notable. In each of the significant questions, the completer group had a higher-than-expected frequency of responses which the investigator has assumed would be characteristic of the dropout group. In each case the members of the completer group displayed some concern about the possible adverse effect of school on the normal family routine.



## Conclusions and Some Suggestions for Reducing Attrition

The primary conclusion of this study is that there were differences in some initial attitudes of students who completed and students who dropped out in the program studied and that the differences were statistically significant. Specifically, seven attitudes out of thirty-nine were significant at the 5 percent or 1 percent level of confidence when no other control was used except that of attendance status. Twenty were significant at those levels when one factual question was used as an additional control. This would indicate that attempts to reinforce desirable attitudes and to change or eliminate undesirable ones might indeed be rewarded by a reduction in attrition. This result might be accomplished by:

1. Informative literature and publicity materials concerning not only the program per se—course descriptions, time and place of meetings, etc.—but other factors as well. For example, information regarding the people in the program, the teachers' facilities (particularly any special ones for adults), the preparation required or not required, and the general differences in the way the program is run for *adults* (as opposed to previous "formal" schooling) might lead to better attitudes upon entrance into a program.

2. Orientation programs, designed especially for the particular adult institution or situation, possibly even for the particular segments or courses thereof. Perhaps the fact that in most adult situations there is no set pace in terms of amount of material that must be covered or mastered to "pass" and no grades given to students might serve to convince some tense students that what they are undertaking does not need to be regarded as "difficult" in the sense that anything will be expected of them over and beyond what they expect of themselves.

3. Reliable predictive instruments, based on research in initial attitudes and geared to individual situations, to aid in the identification of potential dropouts at the very beginning of the program—followed by:

4. Early group guidance or individual counseling involving those students identified as having the attitudes of potential dropouts. Possible outcomes of this might include a realistic idea of what might be gained from the course, a recognition of negative attitudes toward others and a desire to change them, an acknowledgment of home problems that could occur as the result of a change in routine necessitated by attending school, etc.

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5. Changing physical conditions, whenever possible, which may cause undesirable initial attitudes. For example, courses which tend to be popular with students over 50 years of age who, as in this study, express less desirable attitudes toward school location than younger students, might be given at a location other than the school. The new location that is chosen—that is, the entire atmosphere of the physical facility, its furnishings, etc.—might also be one conducive to social contacts, which seems to be another need expressed by this group.

6. Changing a program, either in content or in set, when indications are given that it may be too imitative of previous school experience.

7. Cooperation, rather than competition, with other community organizations in terms of content, time, place of meeting, and, when possible, financing.

8. A change in the assumptions which the particular adult agency, in this case the public school, holds concerning adults as learners, curriculum design for adults, etc., in relation to changing social needs. This is perhaps the most important of all, and certainly basic to all other attempts at changing student attitudes.

Categories, or areas of significance, may be even more helpful in terms of program planning than analysis of attitudes toward individual attitude objects. They may enable the planner to see the forest in spite of the trees and to know which general directions to follow. This study, for instance, indicates that attention to the five areas mentioned previously might be of more benefit than attention to “personal factors” (effect of age, physical well-being, etc.), “environmental factors”—so often given overriding attention in adult education literature, or “prestige.”



## Suggestions for Further Research

The results and conclusions of the study suggest many possibilities for further research. First, it should be determined whether it is the attitudes of students or the factual data about them that is the more important predictor of withdrawal in many different situations. In addition, other studies of a corroborating nature might be undertaken—some in situations where there are usually many early dropouts in order to determine whether more questions are significant for them than for the entire dropout group or situations where there is a larger dropout population so that more controls could be utilized.

The list of attitude objects could be refined by having adult students, both completers and dropouts, rate them and suggest new ones. This might be especially valuable if done as preliminary work in the same situation for which it is intended that a predictive instrument will later be devised.

A determination of whether initial attitudes vary depending on the type of course or program in which the student is enrolled might suggest the need for various predictive instruments geared to specific learning situations. Similarly, various socio-economic groups may differ in predictive attitudes.

After such systematic basic research as that suggested above, instruments could be developed for use in public schools and other adult programs to identify potential dropouts. Experimentation could then take place with orientation programs (dropout-preventive and/or morale-building) designed especially for adults and with group guidance and methods of counseling adults who have been identified as potential dropouts. A variety of techniques could be tried out:

- a) Supportive and constructive only
- b) Non-supportive and/or nonconstructive (non-directive)
- c) Regressive-reconstructive<sup>30</sup>

Based on an analysis of initial attitudes, the publicity and literature of various programs could be changed and the effect tested. Short workshops for teachers of adults could be instituted in a variety of situations and their effectiveness ascertained. The possibilities for creating conditions which would facilitate the unfreezing, changing, and refreezing of attitudes are many, but before exploring them fully it might be profitable to examine the change model developed by Kurt

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Lewin<sup>34</sup> and interpreted by Edgar H. Schein.<sup>53</sup> Schein's outline of the steps required in order to influence an individual to change serve as a reminder of the commitment necessary on the part of the adult educator and the importance of a well-defined personal philosophy of education.

An educational hierarchy also suggests itself. As Guerin and McKeand point out in an article entitled "Attitudes That Hinder Self Improvement,"<sup>21</sup> attention to the psychology which deals with changes in attitudes should possibly take precedence over learning more about how knowledge is acquired and abilities improved. Only when educators become truly effective in influencing and changing attitudes will we begin to reach the many individuals who might benefit from the self-improvement programs we offer.

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## APPENDIX A

### *A Survey of the Relative Importance of Attitude Objects (with summary of responses)*

Please check what you think might be the degree of importance of the attitude objects on the left as possible predictors of withdrawal in adult education programs if attitudes toward the objects were obtained on the *first evening* of classes—before any instruction were given.

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<i>Attitude Objects</i>	<i>Very Important</i>	<i>Important</i>	<i>Not as Important</i>	<i>Unimportant</i>	<i>Don't Know</i>
Weather		6	4	1	
Perceived ease or difficulty of transportation	4	6	1		
Perceived gain from course	5	6			
Possible social contacts at school	3	5	1	1	1
Feeling of preparedness for course	2	4	5		
Perceived prestige in taking part in program	2	1	7	1	
Absence from home and family		4	5	2	
Age (affecting their success in course)	1	2	6	2	
Perceived health and vigor		6	3	2	
Foregoing other activities on school nights	3	5	3		
Foregoing television		4	3	4	
Expected success or failure in course	3	5	3		
Expected quality of instruction	2	6	3		
Distance from school	2	6	2	1	
Length of course	2	5	3	1	
Certificate of attendance (or other evidence of participation)	1		6	4	
Participation in "open house"		1	3	2	5
Ease or difficulty of parking	5	5	1		
Location of school	3	4	3	1	
Appearance, size, degree of complication of school	2	3	3	3	
Manner of registrar and/or other "school" people dealt with	4	4	2	1	
Distribution of age of people whom students find in course with them	2	4	4	1	
Distribution of sex of people whom they find in course with them	1	4	5	1	
Initial appearance of people in course with them	1	6	2	2	
Initial appearance, speech, manner, etc., of instructor	5	5		1	
Appearance of classroom (warmth, coldness, furniture . . .)	2	4	4	1	
"Homework" or outside preparation course might require	2	5	4		
Reputation of program and school	3	8			

<i>Attitude Objects</i>	<i>Very Important</i>	<i>Important</i>	<i>Not as Important</i>	<i>Unimportant</i>	<i>Don't Know</i>
Financial cost of participation (Worth that much or not?)	2	4	3	1	
Size of class in which student finds himself	2	7		2	
Previous school experience (enjoyed or not)	4	5	1		
Arrangement for child care in order to participate in program	1	7	2	1	
Burden placed on spouse or other members of family	2	5	3	1	
Sureness in choice of course	3	6	1		1
Change in living routine on course nights	1	3	5	2	
Value placed on education	4	6	1		
Others: Please write in					
<i>Interest and support of family</i>					
<i>Time of day course is offered</i>					
<i>Time of year course is offered</i>					
<i>Ease or difficulty of course</i>					

(Written in by  
respondents)

## APPENDIX B

### Questionnaire

#### Directions to Students

The questionnaire and answer sheet you have received are part of a study being conducted at Boston University concerning the attitudes of adult education participants. The information you are requested to supply will remain *anonymous*. The university researcher will have your numbered answer sheet but *not* your names; the school will have your name and an identification number, but *no one* at the school will know how any particular student answered any question. After you have completed the answer sheet, you will be asked to put your name and an identification number on a sheet that your teacher will pass around. This identification sheet will remain in the school office so that anonymity is assured.

#### PLEASE FOLLOW INSTRUCTIONS CAREFULLY:

1. Remove the answer sheet from the questionnaire and place it so that the blue stripes are at the top.
2. Do *not* write your name or anything on the answer sheet except as explained below.

- 
3. The answer sheet, as you will notice, has numbers running from 1 to 160. You will be using numbers 1 to 66 only.
  4. Next to each of these numbers are five rectangles with the small numbers 1 to 5 above them indicating the possible answer choices.
  5. To answer question #1 with answer choice #4, for example, fill in rectangle #4 next to #1 on the answer sheet.

	1	2	3	4	5
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

6. As shown in the above example, there are numbered rectangles for *five* answer choices on the answer sheet. However, many of the questions on the questionnaire have fewer than five answer choices. In these cases, the extra answer choice rectangles should simply be ignored.
7. Be sure to use a soft lead *pencil*, bear down hard, and fill in the rectangle completely. If you change your mind about an answer, erase *completely*.
8. There are no "right" or "wrong" answers, so just answer thoughtfully and honestly.
9. You should check often to be sure that the number of the question you are answering matches the number on the answer sheet. It is easy to get "off" one or two if you are not careful about this.
10. Please answer *all* questions, except where the directions state otherwise. When finished, check to be sure you have not skipped a page. Your teacher will supply the answer to question #57.
11. Please do not mark this questionnaire *at all*, as it will be used again.

THANK YOU SINCERELY FOR YOUR COOPERATION

\* \* \* \* \*

1. How "prepared" do you feel for the course you are taking?
    1. Not very prepared
    2. Well prepared
    3. Completely unprepared
    4. Reasonably prepared
  2. How do you feel about the length of the course you are taking?
    1. Too long for my purposes in taking it
    2. I may find it a little short for what I want to learn
    3. It may be a little long for me
    4. Definitely too short for all I want to learn about the subject
  3. How do you think your age will affect your success in the course?
    1. I might fail to accomplish much because of it
    2. I don't feel that my age will be a handicap
    3. I guess I'm not at too good an age for this
    4. I think I'm at a fine age for this
-



- 
4. How do you feel about going out in bad weather (cold, snow, heavy rain)?
    1. I hate it but try to carry on as usual
    2. It doesn't bother me a bit
    3. I don't go out except for absolute necessities
    4. It doesn't seem to bother me as much as most people
  5. How do you feel about missing other activities in order to attend school?
    1. It's a real sacrifice!
    2. I'll miss them, but I guess it's worth it
    3. I greatly prefer school over other activities
    4. Don't feel I'll miss them a great deal
  6. How do you think this "extra" activity will affect you physically?
    1. I expect to be a little overtired
    2. I'll probably feel *better* for it
    3. Don't think it will bother me at all
    4. Might prove to be "too much"
  7. What is your feeling about receiving a certificate of attendance as evidence of having taken this course?
    1. I probably wouldn't want one as I don't think I'd use it for anything
    2. I'd like one very much
    3. I'd take one just to keep in case I should want it
    4. I wouldn't want one
  8. How do you think you'll do in the course you are taking?
    1. I'll probably be a complete failure, but I'll give it a try anyway
    2. To be honest, I think I'll do quite well
    3. Not too well
    4. Pretty well
  9. How much do you expect to get out of the course you are taking?
    1. A moderate amount
    2. Not too much
    3. A little
    4. A great deal
  10. Do you feel that you will make worthwhile friendships with your classmates?
    1. Probably
    2. Very unlikely
    3. Very likely
    4. Not so likely
  11. Do you think people will respect and admire you for taking part in this program?
    1. Yes, very definitely
    2. Probably
    3. No, not particularly
    4. Maybe
-

- 
12. Do you feel "guilty" about the time spent away from home?
    1. No, not really
    2. No, not at all
    3. Yes!
    4. Yes, but not *very*
  13. How do you feel about the distance you travel to and from school?
    1. Much too far
    2. Not far at all
    3. Rather far
    4. Not too far
  14. How do you feel about foregoing television in order to attend school?
    1. Big sacrifice!
    2. A pleasure to get *away* from it!
    3. Small sacrifice
    4. No sacrifice
  15. How do you feel about participating in an adult program "open house" at the end of the year? (The public is invited and the students' work is displayed.)
    1. I wouldn't mind participating
    2. I might be willing to participate in a limited way
    3. I would rather not have anything to do with it
    4. I'd enjoy it very much
  16. How do you regard your transportation to and from school?
    1. Difficult
    2. Fairly easy
    3. Reasonable
    4. Very difficult
  17. What kind of job do you think the teacher will do in teaching this class?
    1. Good
    2. Fair
    3. Excellent
    4. Poor
  18. How do you feel about the parking situation here at school?
    1. It's rather bad
    2. It's very bad
    3. It's excellent
    4. It's pretty good
  19. Considering only *your* use of it, what do you think of the school's location?
    1. Very poorly located
    2. Fairly well located
    3. Rather poorly located
    4. Ideally located
  20. How do you think the school personnel who registered you (or to whom you talked) felt toward you?
-

- 
1. Cold and indifferent
  2. Fairly friendly
  3. Fairly cool
  4. Warm and friendly
20. What is your overall "first impression" of the instructor? (Warmth, manner, appearance, speech, etc.)
1. Unfavorable
  2. Favorable
  3. Rather unfavorable
  4. Rather favorable
21. What is your impression of this classroom for *your* use?
1. Unfavorable
  2. Rather favorable
  3. Favorable
  4. Rather unfavorable
22. How do you feel about the "homework" or outside preparation of any sort that might be involved in this course?
1. I'd rather not be burdened with it
  2. I'm hoping it will be very light
  3. I'm more than willing to do any and all that is suggested
  4. I'm willing—if it's not too much
23. What do you feel is the reputation of the adult program at this school?
1. Good
  2. Fair
  3. Excellent
  4. Poor
24. How do you feel about the fee for this course?
1. Reasonable
  2. Very reasonable
  3. A bit high
  4. Too high
25. What do you think about the number of students in this class?
1. There are definitely too many students
  2. The class seems to be a little on the large side
  3. There are definitely too few students
  4. The class seems to be a little on the small side
26. In general, how do you feel about all your previous school experience?
1. I never particularly enjoyed it
  2. It had its ups and downs
  3. I enjoyed it most of the time
  4. I thoroughly enjoyed it
27. If you have children at home, how do you feel about the arrangement for their care while you are at school? (If no children, don't answer at all.)
-



- 
29. How do you feel about any burden that may be placed on your spouse, member(s) of your family, or anyone, in order that you may attend school?
1. It bothers me a great deal
  2. It bothers me somewhat
  3. I feel that there is no burden placed on anyone
  4. It is not something I worry about to any extent
30. How sure are you that this is the course you really want to take?
1. Very sure
  2. Unsure
  3. A little unsure
  4. Pretty sure
31. How do you feel about any change(s) in your living routine (dinner hour, "house" work, bedtime, etc.) brought about by the fact that you are taking a course at this time?
1. I feel that this involves a good deal of change and sacrifice
  2. Some minor adjustments to be made—but everything will work out okay
  3. Definitely some changes and, I feel, some small sacrifices
  4. I feel that everything is well "under control"—no problems
32. How many years of education do you think a child growing up in today's world ought to have, provided he has ability to profit from it?
1. At least 12 years
  2. At least 16 years
  3. At least 18 years (or a Master's Degree)
  4. More than the above
33. How do you think your family feels about your participation in this program; does it have their interest and support?
1. They have their doubts about the whole thing
  2. They would definitely rather not have me participate
  3. They're somewhat interested and certainly don't mind my participation
  4. They think it's great and are glad I'm participating
34. What do you think of the time of day or evening that this course is offered?
1. It's good, but maybe a slight change would be even better
  2. It's a rather bad time for me
  3. It's very convenient at this time—couldn't be better
  4. It could be at a better time
35. How do you feel about the time of year the course is offered?
1. Very bad
  2. It's not bad
  3. Very good
  4. It's not too good
36. How easy or difficult do you think this course will be?
1. On the easy side
  2. Difficult
  3. Easy
  4. On the difficult side
-

- 
37. What do you think about the distribution of ages of the people in the course?
1. Too many that are too old and/or too young for my liking
  2. A few that are too old and/or too young for my liking
  3. A fair distribution—doesn't bother me
  4. An excellent distribution
38. Considering just *your* preference, how do you feel about the distribution of men and women in this course?
1. Poor
  2. Fair
  3. Excellent
  4. Good
39. What is your initial impression of the people in this course with you?
1. Rather unfavorable
  2. Favorable
  3. Rather favorable
  4. Unfavorable
40. What day of the week does your class meet?
1. Monday
  2. Tuesday
  3. Wednesday
  4. Thursday
41. Have you talked with an administrative person at the school and received advice or counseling about which course to take or any other problem you may have had with regard to your participation in the program?
1. Yes
  2. No
42. Are you hoping for job advancement as a result of taking this course?
1. Yes
  2. No
  3. Not employed
43. Is your employer in any way encouraging you to take this course?
1. Yes
  2. No
  3. Not employed
44. How long have you been a resident of this town?
1. I am *not* a resident
  2. Less than two years
  3. Two—five years
  4. Six—ten years
  5. More than ten years
45. Do you own a home in this town?
1. Yes
  2. No
-

- 
46. Have you taken adult education courses in *this town's* program before?
1. Yes
  2. No
47. Have you taken *any* adult education courses before?  
(Anywhere)
1. Yes
  2. No
48. Approximately how many miles do you live from this school?
1. Less than one
  2. One-three
  3. Four-six
  4. Seven-ten
  5. More than ten
49. What means of transportation do you use to get to and from school?
1. Car pool—or shared ride, taking turns driving
  2. Drive my own (or family) automobile
  3. Walk
  4. Use public transportation
50. Are you active in community affairs—attend meetings of community organizations, etc.?
1. Yes
  2. No
  3. Somewhat
51. What is the farthest you have gone in school or college?
1. Grade school
  2. Some high school education
  3. High school graduate
  4. College
  5. Graduate school after receiving college degree
52. In addition to yourself, how many people are living in your household? (Husband, wife, children, roommate, etc.)
1. None
  2. One
  3. Two
  4. Three
  5. Four or more
53. How would you classify your occupation?
1. Housewife
  2. Retired or not working
  3. Student
  4. White collar worker
  5. Blue collar worker
54. How many hours do you work outside the home on days when you have evening classes?
-



- 
1. Zero-three
  2. Four-five
  3. Six-seven
  4. Eight-nine
  5. More than nine
55. If at home in the evening, how many hours do you generally spend watching television?
1. Zero
  2. Less than one hour
  3. One-two hours
  4. Three-four hours
  5. More than four hours
56. In what category is your age?
1. Under 20
  2. 21-30
  3. 31-40
  4. 41-50
  5. Over 50
57. How many students are in this class?
1. Fewer than 10
  2. 10-15
  3. 16-20
  4. 21-30
  5. More than 30
58. Please indicate your sex.
1. Male
  2. Female
59. How many years has it been since your last *formal* school experience (other than adult education courses)?
1. I am presently attending school or college
  2. One-three years
  3. Four-six years
  4. Seven-ten years
  5. More than ten years
60. How many adult education courses have you taken?
1. None
  2. One or two
  3. Three-five
  4. Six-ten
  5. More than ten
61. How recently did you take your last adult education course?
1. This is my first one
  2. Last year
  3. Two-three years ago
  4. Four-five years ago
  5. More than five years ago
-

- 
62. How long have you been interested in the subject matter of this course?
1. I am not *really* interested
  2. Zero—two years
  3. Three—five years
  4. More than five years
  5. I have always been interested, as far back as I can remember
63. What is your preferred time for watching television?
1. I don't watch at all—or *very* rarely
  2. Daytime
  3. Early evening (until about 10:00 p.m.)
  4. Late evening (10:00 p.m. or so—until bedtime)
64. If necessary, what arrangement have you made for child care while you are at school?
1. No arrangement necessary—no children—or they are old enough to be alone
  2. Husband or wife cares for child or children
  3. Other relative cares for child or children
  4. Hired babysitter
65. How many hours per week do you spend on "outside activities" other than school? (clubs, associations, community affairs, etc.)
1. No other activities of that sort
  2. One—two hours
  3. Three—four hours
  4. Five—six hours
  5. More than six hours
66. What is your marital status?
1. Married
  2. Single
  3. Other
-

APPENDIX C

Sample of Forms

QUESTIONNAIRE IDENTIFICATION FORM

Name of Course \_\_\_\_\_ Teacher \_\_\_\_\_

Night of Meeting \_\_\_\_\_ (To be filled in by teacher)

Students' Names (Please *print*—last name, first)      Answer Sheet Number  
(The one in red)

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

WITHDRAWAL FORM

Iden. No.	Early Dropout (✓)	Tel. No.	Reason
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

APPENDIX D

Questions by Category

CATEGORY 1 (RE: COURSE)

Question No.	Attitude Object
1	Preparedness for course
2	Length of course
8	Success or failure in course



- 
- 9 Expected gain from course
  - 17 Expected quality of instruction
  - 23 Homework or outside preparation
  - 30 Sureness in choice of course
  - 36 Ease or difficulty of course

CATEGORY 2 (RE: PERSONAL FACTORS)

- 3 Effect of age on success in course
- 6 Effect of school activity on physical well-being

CATEGORY 3 (RE: COMPETING FACTORS)

- 14 Foregoing television
- 5 Foregoing other activities outside the home

CATEGORY 4 (RE: INSTRUCTOR/OTHER STUDENTS)

- 10 Expected social contacts at school
- 20 Impression of school personnel
- 21 Impression of instructor
- 26 Number of students in course
- 37 Distribution of ages in course
- 38 Distribution of sexes in course
- 39 Impression of other people in course

CATEGORY 5 (RE: ENVIRONMENTAL FACTORS)

- 4 Going out in bad weather
- 13 Distance to and from school
- 16 Transportation to and from school
- 18 Parking situation at school
- 19 Location of school
- 22 Impression of classroom
- 34 Time of day or evening that class is offered
- 35 Time of year course is offered

CATEGORY 6 (RE: PRESTIGE)

- 7 Receiving a certificate of attendance
- 11 Respect and admiration of others regarding participation in the program
- 15 Participation in an "open house" at the end of the program
- 24 Reputation of the program

CATEGORY 7 (RE: HOME AND FAMILY)

- 12 Guilt about time spent away from home
- 28 Arrangement for child care while at school
- 29 Burden placed on spouse or family
- 31 Changes in living routine because of school
- 33 Family interest and support concerning participation

CATEGORY 8 (RE: EDUCATION)

- 25 Fee for the course
  - 27 Enjoyment of previous school experience
  - 32 Value placed on education
-

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# Modification of the Classroom Behavior of a "Disadvantaged" Kindergarten Boy by Social Reinforcement and Isolation

MARTHA SCHATT ABBOTT

B.A., Colby College, 1964

M.A., Boston University, School of Education, 1967

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*This 1967 Master's degree thesis, by Martha Schatt Abbott, has been abridged by me, in order to conserve space. Secondary analysis and findings not vital to the understanding of the main hypothesis being tested, the discussion of background literature and experimental methodology of classical and operant conditioning, tables and figures portraying daily means and standard deviations, percentages of change in daily behavior of the subject under various experimental conditions, and mean frequency and length of teacher interaction by experimental condition, have been either omitted or abridged.*

*The results of the study have important implications relative to methodology and demonstrate that systematic use of social reinforcement in the classroom can change a child's behavior.*

*Acknowledgement and grateful appreciation is given to Dr. James J. Gallagher, Director of the Education Improvement Program, Duke University, whose direction and collaboration made the study possible and to others who contributed their time and effort at Durham where the data was collected.*

*The complete thesis is available in Boston University's Mugar Library.*

Louis Aikman, Major Advisor  
Boston University

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## *Introduction*

The research in child development shows a new emphasis on behavior modification theory, or more generally referred to as operant conditioning theory. This is the systematic application of learning theory and experimental psychology to the problem of altering maladaptive behavior. One notes a focus of attention on overt behavior and its change through planned manipulation of the same conceptual variables which led to its development.

Many behavioral changes in an individual are brought about by differential social reinforcement which involves the reward of socially appropriate behavior and the nonreward of alternative behavior. To some extent, most parents and educators from time to time deliberately or unwittingly use various methods to modify children's behavior. Rarely, however, do they program or plan the dispensing of reinforcements, either positive or negative to children, or select carefully the models, either real-life or symbolic, that children are permitted to observe. The shaping of behavior by reinforcement is, therefore, a major process responsible for the development of progressively more complex forms of behavior that emerge during the growth of an individual.

The present investigation was undertaken to determine whether a program of social positive reinforcement and punishment could discourage the disruptive and resistant behavior of a five-year-old "culturally deprived" boy. A secondary goal was to explore the applicability of a comprehensive behavior classification system in a behavior modification study. The reinforcing kindergarten teacher used systematic presentation and withholding of her attention, as well as selective social isolation, to encourage a decrease in the child's aggressive, negative-attention-getting and resisting behaviors and an increase in his social, cooperative and conforming behaviors. This procedure was introduced to deal with a problem which was disturbing effective classroom management and pupil learning.

## *Subject*

Bobby was one of twelve children enrolled in the Southside School kindergarten of the Education Improvement Program. These children have low socio-economic backgrounds and reside in a poverty area of Durham. Bobby is a white child in a class composed of an equal number of white and Negro children.

When Bobby entered kindergarten, he was described by his teachers as a bright, alert, verbally-skilled and physically well-coordinated child. After refusing several times to enter the testing situation, Bobby did cooperate with the psychometrist during the experimental phase of this study. On the Peabody Picture Vocabulary he scored 105: on the Co-



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lumbia Mental Maturity Test he scored 104; and on the Stanford-Binet he scored 103, all placing him well within the average range.

The teachers requested a special study using behavior modification techniques after more traditional techniques had proved ineffective with Bobby's disruptive and resistant behavior. Quite frequently he would move away from the kindergarten group and proceed to disrupt the ongoing activity. To a disturbing degree, Bobby was physically and verbally assaultive toward other children. On several occasions Bobby had sudden and uncontrollable outbursts. He resisted his teacher's attempt to calm him, whined and cried "leave me alone," and threatened "my Daddy will come beat you up."

Bobby is the middle sibling in a family of three children, having an older sister, age 8, in the third grade and a younger brother, age 2½ years. Both of his parents live at home and his father works in the maintenance department of a large store. Because of financial difficulties, his mother worked for a year after Bobby's birth. However, the neighbors reported hearing the children cry, so his mother stopped working. The class social worker feels that the mother is uncomfortable and sometimes confused in her role as a mother. She wants the children's love and affection and lets things get out of hand before setting any limits. On the other hand, the father is very strict with the children.

Prior to entering kindergarten, Bobby had a limited exposure to children of his own age. The parents were very protective and he was never permitted to leave the yard. Consequently, Bobby played with his older sister and her friends and had trouble conforming to their play activities. Frequently a fight resulted and Bobby withdrew to his room, insisting on being alone. This social and family history was gathered to aid in planning the behavior modification treatment and formulating the hypotheses.

### *Behavioral Categorization and Recording*

The scale employed to analyze Bobby's behavioral change was the Coping Analysis Schedule for Educational Settings (CASES) developed by Dr. Robert L. Spaulding.<sup>1</sup> This scale consists of thirteen basic behavior categories, which were further classified into desirable, inappropriate, and unacceptable behavior, as presented in Table 1.

In order to determine the degree of agreement on behavioral classification of this experiment's recorder with that of other observers, several reliability checks were conducted. Twelve separate ten-minute time-sampling checks with two observers classifying the same behavior independently were carried out involving a comparison of this experi-

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1. Robert L. Spaulding, "A Coping Analysis Schedule for Educational Settings (CASES)," (Durham, North Carolina: Education Improvement Program, Duke University, 1965) pp. 1-5.

TABLE 1.

*Modified Coping Analysis Schedule for Educational Settings (CASES)*

## DESIRABLE (D)

- 5a. *Self-Directed Activity*—working independently on an activity or project with interest.
6. *Paying Rapt Attention*—listening and attending with interest to the on-going activity.
- 7a. *Sharing and Helping*—contributing ideas and interests, volunteering answers, and helping others.
- 8a. *Social Interaction*—mutual interaction through conversation, games, and joint projects.
9. *Seeking Support, Assistance, and Information*—asking for help, sympathy, and attention from teacher or peers.
10. *Following Instructions Passively*—conforming to expectations without great interest.

## INAPPROPRIATE (I)

- 5b. *Self-Directed Activity*—5a., but at an inappropriate time.
- 7b. *Sharing and Helping*—7a., but at an inappropriate time.
- 8b. *Social Interaction*—8a., but at an inappropriate time.
11. *Observing Passively*—being distracted from on-going activity.
12. *Responding to Internal Stimuli*—no observable interaction with environment.

## UNACCEPTABLE (U)

1. *Assaultive Behavior*—direct verbal or physical attacks or destruction of property.
2. *Negative (Inappropriate) Attention-Seeking Behavior*—loud or annoying disruptive behavior which seems to be directed toward obtaining the attention of others through unacceptable behavior.
3. *Manipulating and Directing Others*—bossing others.
4. *Resisting Authority*—actively or passively refusing to comply with teacher's expectations or requests.
13. *Physical Withdrawal or Avoidance*—flight, moving away, hiding.

ment's observer with four other trained recorders. Reliability was computed in terms of exact (precise category agreement) percentage of agreement and percentage of agreement in the molar categories of desirable, inappropriate, and unacceptable behavior.

The range of the percentage of exact agreement the observer obtained with the four other observers ranged from 70% to 92%. The percentage of larger category agreement ranged from 86% to 100%. There is, therefore, ample evidence that the system of behavioral classification employed in this study does have meaning and reliability (after teaching) beyond the lone observer.

The data were collected by means of an event recorder which yielded a continuous record of Bobby's behavior. The data paper runs through

the recorder at a constant rate and is marked by any of twenty keys. Thirteen keys recorded changes in behavior using the Coping Analysis Schedule. The (a) and (b) subdivisions were recorded by moving the key once for (a) and moving it quickly two times for (b). Four keys recorded the reinforcing teacher's interactions with Bobby.

The teacher's interactions with the subject were classified as neutral, physical, verbal and gestural as presented in Table 2. These interactions were summarized in the data analyses as follows: neutral interaction—conversation or relevant proximity without a connotation of explicit approval or disapproval; positive interaction—verbal or non-verbal communication with explicit approval; and negative interaction—verbal or non-verbal communication with explicit disapproval or displeasure.

Since M & M candy was used routinely in the kindergarten as reinforcement (not with this study), it was also recorded by a key on the event recorder. Finally, one key was used to indicate a group activity change or any notable change in the environment.

As with the categorization of the subject's behavior, reliability checks of the teacher interactions, with an independent observer, were carried out. No attempt was made to calculate agreement on the onset and cessation of an interaction. Rather, the two observers agreed that an interaction was on-going and independently rated the character of the interaction as positive, negative, neutral or re-directing. Two comparisons were made, each consisting of 40 interactions, between this experiment's observer and one other observer. The first reliability check yielded an exact agreement of 92.11% and the second, obtained during a different experimental condition, yielded an exact agreement percentage of 92.50%. Although the sample of reliability computations is small, the high agreement does indicate that this descriptive division of teacher-pupil interaction has meaning beyond the single observer.

TABLE 2.  
*Classification of Teacher Interactions*

Neutral Interactions:	Conversation, standing near-by
Physical Interactions:	
Positive	Patting Bobby on the head
Negative	Taking Bobby to isolation
Verbal Interactions:	
Positive	Praise
Negative	Warning about impending isolation
Gestural Interactions:	
Positive	Smiles, nods
Negative	Frowns, shaking the head, quieting with a finger

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The data taken on the event recorder were analyzed daily. For each activity the data were analyzed to show total time in each category, total frequency in each category and percentage of time in each category during the activity. The total time and percentages were also computed for the more molar classifications of desirable, inappropriate, and unacceptable behavior. The teacher interactions were charted according to the type and length of interaction and Bobby's behavioral changes during the interaction.

### *Procedure*

The present study included five experimental conditions as follows:

#### **1. Baseline**

Bobby's behavior was recorded using the Coping Analysis Schedule for Educational Settings in order to ascertain the operant level of his behavior. The reinforcing teacher's interactions were recorded simultaneously with Bobby's behavior. At first, data were taken during all of the kindergarten activities and then three activities were chosen for observation and intervention. Freeplay (30 minutes), discussion (10 minutes), and rest (5 minutes) were the activities selected due to the extent and variability of Bobby's undesirable behavior during these activities and the constancy in length of time from day to day.

Having observed Bobby's behavior during the Baseline period, the following hypotheses were made: 1.) The teacher was positively reinforcing Bobby's negative and aggressive behavior by her disapproval; 2.) This disapproval was too mild to serve as punishment and no powerful punishing consequences followed the teacher's threats, so that teacher disapproval had not acquired conditioned punishment properties; 3.) Bobby was receiving peer social reinforcement for his aggressive and disruptive behavior; 4.) Adult attention would be reinforcing to Bobby; and 5.) Isolation would be punishing to Bobby.

#### **2. Social Reinforcement—Treatment I**

The social (potential) reinforcement was presented on a near-continuous variable-ratio schedule to give Bobby maximum possible adult attention contingent upon desirable behavior and minimum attention contingent upon inappropriate or unacceptable behavior. These behaviors are defined in Table 1. The reinforcement schedule was carried out by only one of the three teachers in the classroom and an effort was made to hold all other variables constant throughout the study. Thus, the reinforcing teacher gave positive social attention to Bobby for desirable behavior, ignored all inappropriate behavior, and ignored unacceptable behavior unless it was intolerable at which time Bobby was given a short negative verbal threat of isolation. If he did not stop his



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unacceptable behavior within five to ten seconds, Bobby was put in isolation for five minutes.

The isolation condition meant that he sat by himself in an enclosed cubicle in a room adjoining the kindergarten. Bobby was initially warned that if he were unable to sit there quietly by himself (the teacher immediately returned to the classroom), he would go to the principal's office to sit for ten minutes. If Bobby continued his unacceptable behavior, the principal was to inform the teacher and then Bobby would be taken home. He was not informed of this final ultimatum because it was hypothesized that he might prefer to go home and, therefore, misbehave. The purpose of the teacher's warning and isolation procedure was to develop teacher verbal disapproval as conditioned punishment.

During the entire study, the potential positive social reinforcement consisted of adult attention by standing near his play activity, watching with interest, giving pleased gestural expression, and talking to him in a positive or neutral manner. The negative warning was usually a statement such as, "Bobby, you can either join the group or go sit by yourself for a few minutes."

As the study progressed, it was decided that the social reinforcement treatment should be slightly altered, producing Treatment I and Treatment II. The first treatment consisted of ignoring all inappropriate behavior and ignoring undesirable behavior unless it was intolerable. Bobby seemed able to recognize this limit and emitted very little unacceptable behavior, but slightly increased his inappropriate behavior.

### **3. Social Reinforcement—Treatment II**

The reinforcing teacher continued to give positive social attention to Bobby for desirable behavior, but ignored inappropriate behavior only until it became disruptive to the group. Then he was given a verbal warning, followed by isolation if he did not behave within the desirable limit. The second phase of treatment involved, therefore, less stringent requirements for punishment so that the teacher was, in effect, less tolerant.

There is a possible confounding set of circumstances which occurred after two days of Treatment II. The discussion activity was moved to the first time period of the school day, a change which was maintained. Another, more temporary, change in the freeplay activity was instituted at the same time. For several days, extending throughout the middle five days of Treatment II, the freeplay activity was slightly more structured than previously. The children were given a choice of three activities to participate in, which were related to an on-going unit of instruction. These changes do represent slight reorganization of Bobby's school environment and must be considered as possible confounding

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variables. However, the characteristics of the changes are in the direction of a more structured, stricter classroom environment so that they may be considered, albeit unplanned, part of Treatment II.

#### **4. Reversal**

This stage was a brief reversal period in which the reinforcing teacher attempted to return to Baseline conditions, as nearly as possible. She interacted with Bobby with disapproval when he was exhibiting inappropriate and unacceptable behavior, but gave no verbal warnings of and no periods of isolation. Thus, she paid attention to him when he was being disruptive, and not when he was behaving appropriately. This procedure was considered necessary to ascertain whether the teacher's attention and isolation from attention were the significant independent variables. The hypothesis was that if the teacher were the controlling variable, Bobby's behavior would become more undesirable and inappropriate during the Reversal condition.

#### **5. Reintroduction of Social Reinforcement**

During this stage the teacher attempted to return to the reinforcement schedule of Treatment II in the social reinforcement period.

The reinforcement schedule was gradually shifted from continuous to more intermittent until Bobby received adult attention in an amount normal for the group. After the completion of the study, data were taken on two days to check on the maintenance of the gains. An informal attempt was made to generalize the treatment to the two other teachers who were interacting with Bobby.

Changes from one condition to the following were instituted according to a criterion set before the study began. The criterion was that on two consecutive days Bobby's percentage of desirable, inappropriate, and unacceptable behavior had to fall within the range of the preceding percentages of that behavior in each of the three activities. Because instability of behavior was one of Bobby's prime characteristics prior to the study, a criterion of stable behavior on consecutive days was held to be untenable during the Baseline. This stability criterion was not enforced during the Reversal condition for two reasons. The Reversal trend was obviously accelerating in the expected direction and the resumed disturbance to the class motivated the teachers to strongly advocate resumption of the treatment.

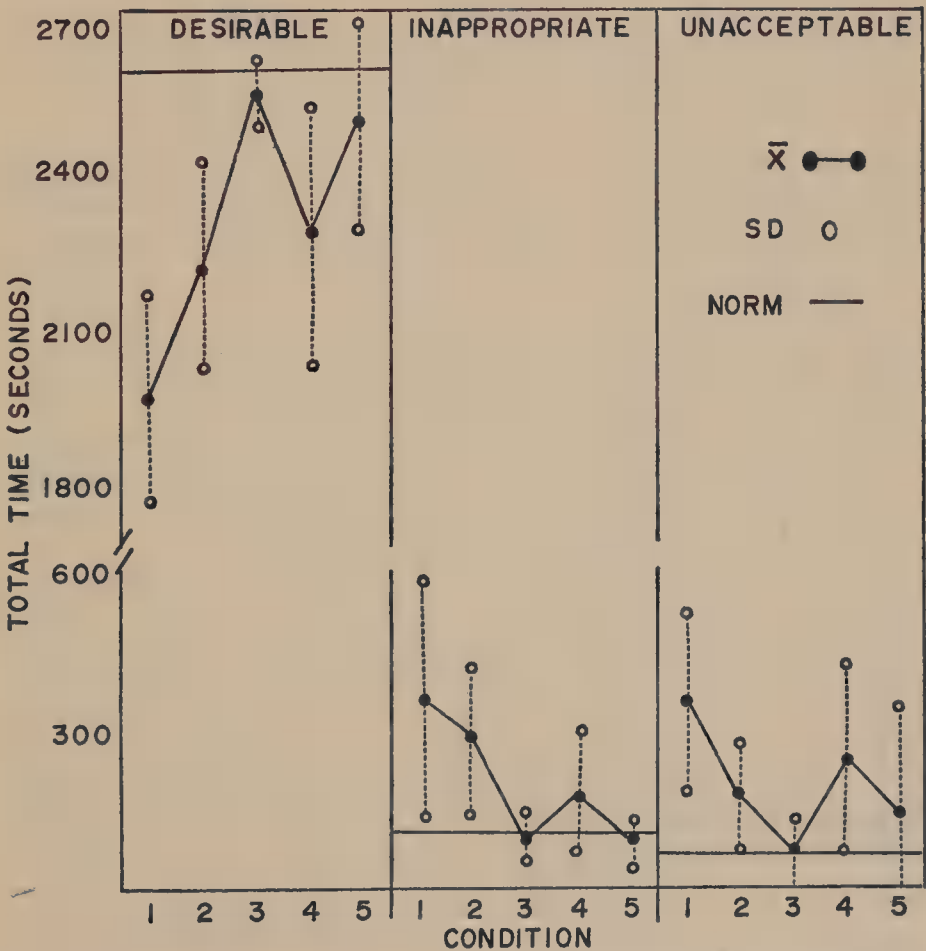
#### *Results*

The summary data of Bobby's behavior throughout the study indicate a definite increase in desirable and a decrease in inappropriate and unacceptable behaviors as a result of the experimental treatment. Figure 1 shows the overall change in Bobby's behavior in the combined ac-

tivities, a recorded time of 2700 seconds a day. Freeplay (30 minutes) comprises 66% of the total time, discussion (10 minutes) 22%, and rest (5 minutes) 11%. The days that Bobby was isolated in any one of the three activities were omitted in computing all summary data. It was decided that the time spent in isolation could not justifiably be included in the desirable, inappropriate or unacceptable behavior categories. The isolation day could not be included in this summary data without accounting for the isolation time because a constant total time for each day was desired. The omission of those days has very little systematic effect on these data because isolation days do not categorically indicate the highest unacceptable behavior, as seen in Figures 6, 9, and 12.

Looking at Figure 1, it is evident that the systematic presentation

FIGURE 1.  
*Combined Activities: Mean and Standard Deviation of Subject's Behavior by Experimental Condition*  
 (1-Baseline, 2-Treatment I, 3-Treatment II, 4-Reversal, 5-Reintroduction)



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and withholding of adult attention by the reinforcing teacher altered Bobby's behavior when all activities are considered together. During the first treatment of positive social reinforcement (Condition 2) there is a 9% increase from Baseline in mean desirable behavior and during the second treatment (Condition 3) there is an additional increase of 12% in desirable behavior as compared to the first treatment.

The effect of the two treatments is also shown by the 10% decrease in inappropriate behavior and 11% decrease in unacceptable behavior from Condition 1 to Condition 3. Bobby's behavior becomes more stable in the second treatment as shown by the smaller standard deviation.

In some instances the mean minus one standard deviation yields a negative number, (e.g., Conditions 3 and 5 in unacceptable behavior) indicating that the distribution within the condition is not normal. Therefore, the use of the standard deviation is questionable, but in most cases the distribution is held to be normal so that the usefulness outweighs the occasional inapplicability. In this study, a negative standard deviation indicates that Bobby was consistently good, having several days of 100% desirable behavior or 0% inappropriate or unacceptable behavior.

During Reversal (Condition 4) there is a marked decrease in desirable behavior and increase in undesirable behaviors, although these trends do not replicate the Baseline data. With the reintroduction of social reinforcement (Condition 5) his behavior again improves.

The theoretical curves for Bobby's behavior would be similar to the curves shown in Figure 1. Theoretically, the desirable behavior curve would increase from Baseline through the second treatment, decrease to about the same level as Baseline in Reversal, and then increase again in Reintroduction. The inappropriate and unacceptable theoretical curves would show the reverse trends, decreasing in Conditions 2 and 3, increasing in Condition 4, and then decreasing in the last condition. As shown in Figure 1, the means of all three behaviors follow the theoretical curves with the exception of Condition 4 not returning to the Baseline level, and desirable and unacceptable behavior in Reintroduction not replicating the mean of Condition 3.

The norms in these data represent the behavior of all boys in Bobby's kindergarten group as shown in Table 3. In Treatment II the mean for Bobby's desirable behavior is only slightly below the norm and his inappropriate and unacceptable behavior fell on or below the norm.

Graphic presentation of the means in the various experimental conditions is one way in which any behavioral changes can be evaluated. The question of the significance of a particular decrease or increase may be raised, especially when the ranges within the two conditions overlap. There appear to be no statistical techniques ideally suited to a one subject experiment in which the data from different days



TABLE 3.

*Boys in Southside Morning Kindergarten**Desirable, Inappropriate, and Unacceptable Behavior by Activity*

	<i>Desirable</i>	<i>Inappropriate</i>	<i>Unacceptable</i>
Freeplay:			
Percent	98.38	.97	.65
Mean Time (Seconds)	1,770.84	17.46	11.70
Discussion:			
Percent	89.63	7.32	3.05
Mean Time (Seconds)	537.78	43.92	18.30
Rest:			
Percent	88.24	6.37	5.39
Mean Time (Seconds)	264.72	19.11	16.17
Combined Activities:			
Percent	94.83	3.14	2.03
Mean Time (Seconds)	2,560.41	84.78	54.81

are not independent. It was decided to employ traditional analysis of variance and *t* tests although the interpretation of these statistics must be severely modified. They cannot be employed inferentially, only descriptively. They permit a comparison of two condition means while taking into account the variance within the conditions.

An analysis of variance on the sample of days in each condition (combined activities) was computed, yielding a main experimental treatment effect significant at the .01 level. A series of *t* tests were calculated comparing every combination of the experimental treatment effect on desirable and unacceptable behavior as shown in Table 4.

There are several differences between conditions which the experimental hypotheses predict. Without large differences at these points, the success of the experiment would be in doubt. The experimental hypotheses predict that there should be significant (*p* .05) differences between Baseline and Treatment I, Baseline and Treatment II, Baseline and Reintroduction. In brief, all the social reinforcement and punishment conditions should result in more desirable and less unacceptable behavior. On the other hand, Baseline and Reversal should not be greatly different as the latter condition was administered to demonstrate the reversibility of the behavior.

In examining Table 4 and considering the unacceptable behavior, it is evident that Baseline is significantly different from both original treatments and the Reintroduction of the treatment. Also as expected, Baseline and Reversal were not significantly different. Additional findings were that Treatment I was significantly different from Treatment II, and Treatment II was significantly different from Reversal, as expected.

TABLE 4  
Matrix of *t* Tests and Probabilities

	Baseline	Treat- ment I	Treat- ment II	Reversal	Reintro- duction
Baseline		$t = 2.734$ $p < .02$	$t = 4.081$ $p < .01$	$t = 1.296$ $p < .30$	$t = 2.628$ $p < .02$
Treatment I	$t = 2.94$ $p < .01$		$t = 2.380$ $p < .05$	$t = .9275$ $p < .40$	$t = .4413$ $p < .70$
Treatment II	$t = 7.27$ $p < .01$	$t = 4.571$ $p < .01$		$t = 2.391$ $p < .05$	$t = .9887$ $p < .40$
Reversal	$t = 2.783$ $p < .02$	$t = .6101$ $p < .60$	$t = 2.471$ $p < .05$		$t = 1.052$ $p < .40$
Reintroduction	$t = 6.008$ $p < .01$	$t = 3.158$ $p < .01$	$t = .8377$ $p < .50$	$t = 1.806$ $p < .10$	

Considering desirable behavior, it is evident that Baseline is significantly different from both treatments and Reintroduction as predicted, but it is also different from Reversal. To explore this difference further, one can look at Reversal in comparison to the other conditions: Reversal is significantly different from Treatment II, as well, so that the *t* test substantiates the graphic evaluation that desirable behavior did decrease significantly during the Reversal as compared to Treatment II, but it did not fall to the Baseline level.

The percentages of time in desirable, inappropriate and unacceptable behaviors for the three activities are shown in Figure 2. All of these curves follow the predicted theoretical curves with the exception of inappropriate behavior in freeplay and rest, and unacceptable behavior in freeplay. Bobby's behavior was more variable in discussion and rest than in freeplay. In rest, the slight increase in inappropriate behavior in Condition 2 may be explained by Bobby's possible discrimination between unacceptable behavior for which he was isolated and inappropriate behavior which was ignored by the teacher, but reinforced by his peers. The introduction of the stricter second treatment, isolation for inappropriate behavior, (Condition 3) was accompanied by a decrease in inappropriate behavior.

Deviations from the theoretical curves were further discussed and each activity was considered separately. The purpose of Figure 2 is to allow a general comparison of the results in each activity to those of the other two.

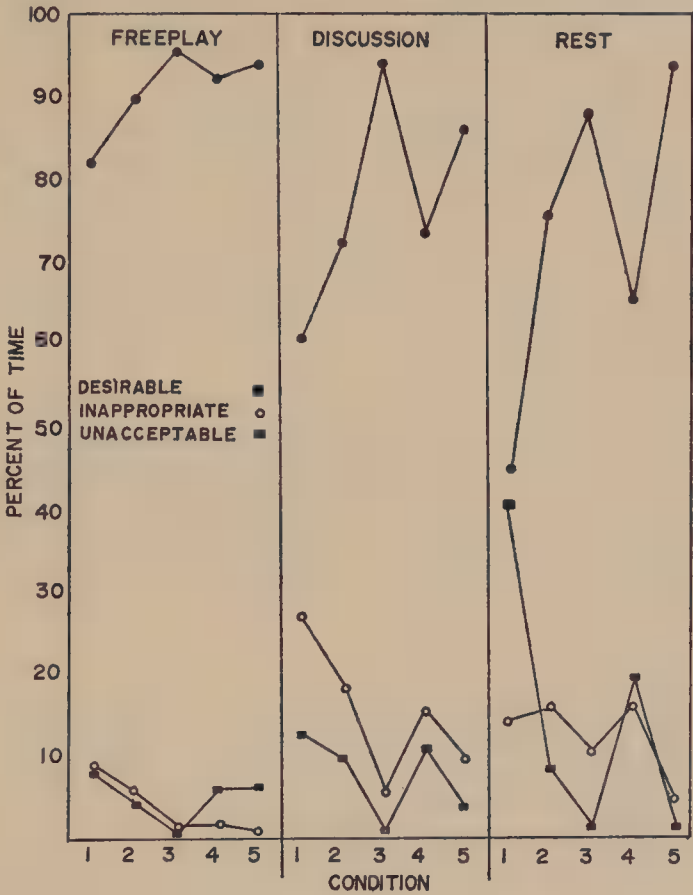
FIGURE 2.

*Percentage of Desirable, Inappropriate, and Unacceptable Behavior by Activity and Condition*

*(1—Baseline, 2—Treatment I, 3—Treatment II, 4—Reversal, 5—Reintroduction)*

*Percentage of Desirable, Inappropriate, and Unacceptable Behavior by Activity and Condition*

*(1—Baseline, 2—Treatment I, 3—Treatment II, 4—Reversal, 5—Reintroduction)*



### Discussion

The baseline data supported the teacher's concern about Bobby's disruptive, resistant and aggressive behaviors. They also indicated that his behavior was extremely variable and unpredictable. With the introduction of the first treatment of positive social attention contingent upon desirable behavior, ignoring all inappropriate behavior, and punishing unacceptable behavior, Bobby's behavior showed a marked improvement and with the second treatment, giving positive social attention contingent upon desirable behavior and punishing inappropriate and unacceptable behavior, his behavior stabilized at a desirable level. During the Reversal Bobby's behavior regressed sufficiently to indicate

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that the reinforcing teacher's attention and isolation from attention were significant independent variables affecting Bobby's behavior. In the re-introduction of experimental Treatment II, Bobby's behavior returned to a desirable level. Bobby was no longer considered a behavior problem to the teachers.

The presence of two other teachers in the kindergarten somewhat complicated the administration of reinforcement by the experimental teacher. The others were at times reticent to interact with Bobby or sometimes they would inadvertently contradict the reinforcing teacher. As a result, subsequent studies have involved collecting data on all teachers present.

After a survey of the literature in this field, this investigation appears to be one of the first to employ a comprehensive system of a child's behavior in attempting to modify his behavior.<sup>2</sup> Previously, operant studies have discussed a single behavior to be analyzed and modified. In this study the continuous and all-inclusive record of Bobby's behavior and of the simultaneous teacher interactions give a comprehensive picture of the situation.

The results of this study indicate that the systematic use of social reinforcement techniques in the classroom can significantly change a child's behavior, even when the target is more comprehensive than the single operant. The procedures described offer a clear, objective guide for discriminating occasions to present and to withhold positive reinforcement.

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